

WHAT IS CLAIMED IS:

1. A semiconductor structure formed in a semiconductor material of a first conductivity type, the semiconductor material having a first dopant concentration, the semiconductor structure comprising:
- 5 a first region of the first conductivity type formed in the semiconductor material, the first region having a dopant concentration that is greater than the dopant concentration of the semiconductor material;
- 10 a second region of a second conductivity type formed in the semiconductor material to adjoin the first region;
- a layer of isolation material formed on the semiconductor material;
- 15 a conductive contact formed through the layer of isolation material to make an electrical contact with the first region;
- a first metal trace formed over the layer of isolation material and the conductive contact;
- a layer of insulation material formed on the first metal trace;
- 20 a conductive via formed through the layer of insulation material to make an electrical contact with the first metal trace;
- a second metal trace formed on the layer of insulation material and the conductive via to make an electrical contact with the conductive via;
- 25 a layer of passivation material formed over the second metal trace, the layer of passivation material including nitride; and
- a titanium protection layer formed over the layer of isolation material and the conductive contact, and below the layer of passivation material.

10555949v1

072219-0278259 (P05108)

-14

2. The apparatus of claim 1 wherein the first region is biased with a first voltage and the second region is biased with a second voltage, the first voltage being greater than the second voltage.

5

3. The apparatus of claim 1 wherein the titanium protection layer includes an element from the list of titanium, titanium-tungsten, and titanium metal silicides.

10

4. The apparatus of claim 1 wherein the titanium protection layer is formed on the isolation layer and the conductive contact under the first metal trace.

5. The apparatus of claim 4 wherein the first region is biased with a first voltage and the second region is biased with a second voltage, the first voltage being greater than the second voltage.

6. The apparatus of claim 4 wherein the titanium protection layer includes an element from the list of titanium, titanium-tungsten, and titanium metal silicides.

7. The apparatus of claim 1 wherein the titanium protection layer is formed on and over the first metal trace.

8. The apparatus of claim 1 wherein the first region is biased with a first voltage and the second region is biased with a second voltage, the first voltage being greater than the second voltage.

¹²
~~9.~~ The apparatus of claim ¹⁰~~7~~ wherein the titanium protection layer includes an element from the list of titanium, titanium-tungsten, and titanium metal silicides.

5 ⁷
~~10.~~ The apparatus of claim 1 wherein the titanium protection layer is formed on the insulation layer and the conductive via under the second metal trace.

⁸
~~11.~~ The apparatus of claim ⁷~~10~~ wherein the first region is
10 biased with a first voltage and the second region is biased with a second voltage, the first voltage being greater than the second voltage.

⁹
~~12.~~ The apparatus of claim ⁷~~10~~ wherein the titanium protection layer includes an element from the list of titanium, titanium-tungsten,
15 and titanium metal silicides.

^{Sub 14}
13. The apparatus of claim ~~1~~ wherein the titanium protection layer is formed on and over the second metal trace.

20 ^{14.} The apparatus of claim 13 wherein the first region is biased with a first voltage and the second region is biased with a second voltage, the first voltage being greater than the second voltage.

15. The apparatus of claim 13 wherein the titanium protection
25 layer includes an element from the list of titanium, titanium-tungsten, and titanium metal silicides.

16. A method of forming a semiconductor structure in a semiconductor material of a first conductivity type, the semiconductor material having a first dopant concentration, the semiconductor structure comprising:

5 a first region of the first conductivity type formed in the semiconductor material, the first region having a dopant concentration that is greater than the dopant concentration of the semiconductor material;

10 a second region of a second conductivity type formed in the semiconductor material to adjoin the first region;

a layer of isolation material formed on the semiconductor material;

a conductive contact formed through the layer of isolation material to make an electrical contact with the first region,

15 the method comprising the steps of: —

forming a first metal trace over the layer of isolation material and the conductive contact;

forming a layer of insulation material on the first metal trace;

20 forming a conductive via through the layer of insulation material to make an electrical contact with the first metal trace;

forming a second metal trace on the layer of insulation material and the conductive via to make an electrical contact with the conductive via;

25 forming a layer of passivation material over the second metal trace, the layer of passivation material including nitride; and

forming a titanium protection layer over the layer of isolation material and the conductive contact, and below the layer of passivation material.

17. The method of claim 16 wherein the titanium protection layer is formed on the isolation layer and the conductive contact under the first metal trace.

5

18. The method of claim 16 wherein the titanium protection layer is formed on and over the first metal trace.

19. The method of claim 16 wherein the titanium protection layer is formed on the insulation layer and the conductive via under the second metal trace.

10

20. The method of claim 16 wherein the titanium protection layer is formed on and over the second metal trace.

15